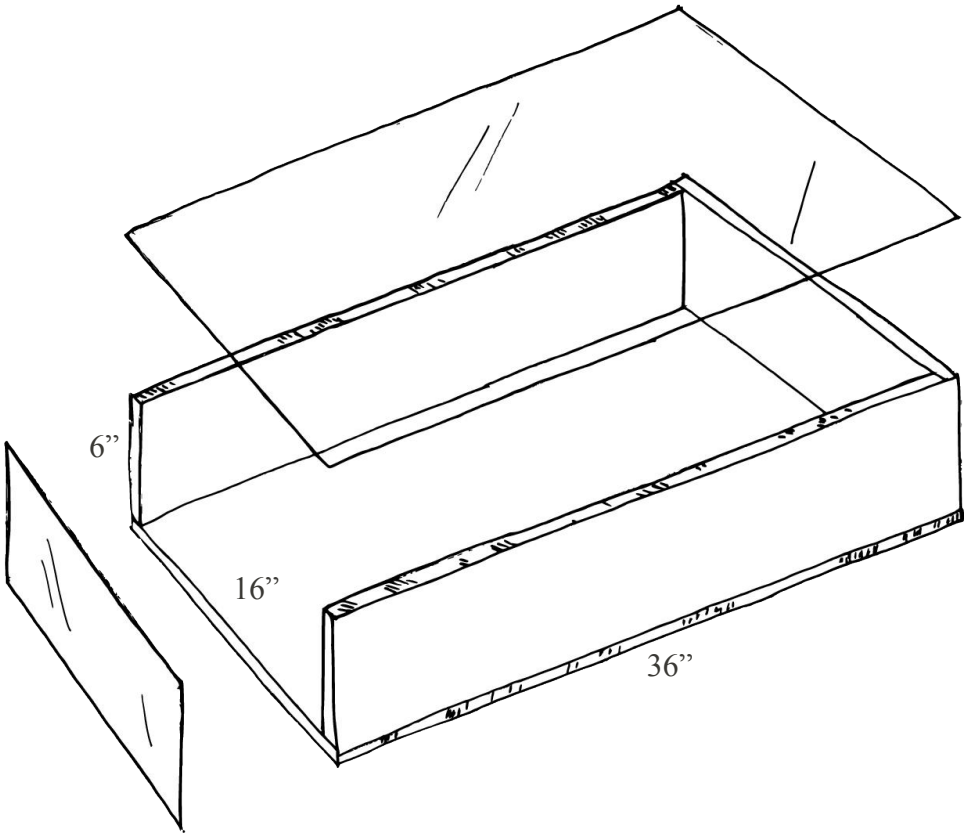
Reusable Watershed in a Box

This model is reusable. It can be set up as a station for 4-6 students to use at a time as a part of the simpler "watershed in a box" activity.

Time Required: 2 - 4 hours



Materials

- ½ inch plywood base, 16" x 36"
- 1" x 6" x 90" wood cut into 3 pieces (2 sides: 1" x 6" x 36" and 1 back: 1" x 6" x 16")
- 2 sheets of clear acrylic for cover (16" wide x 36" long') and front (6" x 16")
- ½ inch wire mesh (also called hardware cloth)
- 16 ½-inch drywall screws
- Screwdriver or drill with screwdriver bit and drill bits
- Several colors of modeling clay (e.g., gray for hillside, brown for mudflats, blue for water, dark and light green for meadows, marshes, and wetlands)
- 1 inch diameter PVC pipe or similar for rolling pin
- Clay-working tools, such as potter tools
- Handles and wire for cutting clay
- Props as needed (Model bridges, roadways, culverts, trees, bushes, houses, fences, and animals can be acquired at model shops or toy stores or brought in my students.)

Procedure

1. Construct a wooden box out of the listed materials per the diagram above. These dimensions were selected to make the model transportable but still be large enough to allow for 4-6 students to gather around at one time.
2. Develop landscape shapes using the wire mesh. Hardware cloth comes in different mesh sizes. ½ inch square mesh is fairly easy to work with and holds forms well. The shapes you create should show sloping land with stream valleys. Two separate shapes can be placed into the box along either side of a larger valley where the model river is located. Create an estuary catch basin at the boxes open end. Anchor the wire shapes to the sides, bottom, and back of the wooden box with a staple gun or with several short screws.
3. Roll the modeling clay into ¼ inch thick sheets and apply to the wire mesh shapes. Working with the clay is best done in a warm, but not hot, room. Care should be taken to gently press the clay into the mesh so that it holds without breaking through. Add layers of clay to thin spots.

4. Create additional thin slabs of colored clay for the valley bottom and various types of land surfaces (marshes, meadow, mudflats, etc.). For the stream, cut thin strips from the blue clay slab and place these end-to-end along the stream course. Use narrower strips in the upper reaches of the stream and wider strips downstream. Seal gaps between pieces of clay by gently pressing and sliding your fingers across the gaps until they disappear.
5. Use available props to add interesting features to your watershed.
6. After your students have used the watershed model, drain the water and allow the model to dry out. Attach the small acrylic sheet to the open end of the model. Cover the model with the large clear acrylic sheet. Store the model for future use.